

Claims

1. A method of making a cathode assembly of an FED, comprising:
 providing a substrate;
 5 forming an emitter electrode structure on the substrate;
 forming a resistive layer over the emitter electrode structure;
 forming an insulative layer on a portion of the resistive layer;
 forming at least one micropoint emitter in contact with the resistive layer;
 forming a conductive grid structure spaced from the at least one micropoint;
 10 and
 forming a dielectric structure spaced from the at least one micropoint and
 between the insulative layer and the grid structure.
2. The method of Claim 1 wherein said emitter electrode structure
 15 comprises metal.
3. The method of Claim 1 wherein said emitter electrode structure
 comprises aluminum.
- 20 4. The method of Claim 1 wherein said resistive layer comprises silicon.
5. The method of Claim 1 wherein said insulative layer comprises silicon
 oxide.
- 25 6. The method of Claim 1 wherein said insulative layer comprises silicon
 nitride.

7. The method of Claim 1 wherein said insulative layer comprises a strip having a thickness of about 1000 Å.

8. The method of Claim 1 wherein said structure comprises glass.

9. The method of Claim 1 wherein forming said conductive grid structure and said dielectric structure comprise:

depositing a dielectric layer over the insulative layer and said at least one micropoint emitter;

depositing a conductive layer over the dielectric layer; and

selectively etching openings through the conductive and dielectric layers to expose the at least one micropoint emitter, with walls defining the openings being spaced away from the at least one micropoint emitter.

10. A column line structure for use in a cathode assembly of an FED, comprising:

a conductive structure;

a resistive layer formed on said conductive structure; and

an insulative layer formed partly over said resistive layer.

11. The column line structure of Claim 9 wherein said conductive structure comprises metal.

12. The column line structure of Claim 9 wherein said conductive structure comprises aluminum.

13. The column line structure of Claim 9 wherein said resistive layer comprises silicon.

14. The column line structure of Claim 9 wherein said insulative layer comprises silicon oxide.

15. The column line structure of Claim 9 wherein said insulative layer comprises silicon nitride.

16. The column line structure of Claim 9 wherein said insulative layer comprises a strip having a thickness of about 1000 Å.

17. In a method of making a field emission device, a method of making a column line structure for an addressing matrix, comprising:

15 forming a conductive structure;
forming a resistive layer on said conductive structure; and
forming an insulative layer partly covering said resistive layer.

18. The method of Claim 17 wherein said conductive structure comprises metal.

19. The method of Claim 17 wherein said conductive structure comprises aluminum.

20. The method of Claim 17 wherein said resistive layer comprises silicon.

21. The method of Claim 17 wherein said insulative layer comprises silicon oxide.

22. The method of Claim 17 wherein said insulative layer comprises
5 silicon nitride.

23. The method of Claim 17 wherein said insulative layer comprises a strip having a thickness of about 1000 Å.

10 24. A method of making an FED, comprising: making a cathode assembly, making an anode assembly, and assembling said cathode and anode assemblies, wherein said step of making a cathode assembly includes forming an insulation layer on column lines forming part of an addressing matrix to reduce the possibility of shorting between the column lines and a conductive grid structure of the FED.

15 25. An FED, comprising a cathode assembly and an anode assembly assembled with said cathode assembly, wherein said cathode assembly includes an addressing matrix comprising multiple row lines and column lines, said column lines having an insulation layer thereon to inhibit shorting with the row lines.

20 26. A method of making an FED, comprising:
making a cathode assembly, making an anode assembly, and assembling the cathode and anode assemblies,

25 wherein said step of making a cathode assembly comprises
providing a substrate;
forming an emitter electrode structure on the substrate;
forming a resistive layer over the emitter electrode structure;

forming an insulative layer on a portion of the resistive layer;
forming at least one micropoint emitter in contact with the resistive
layer;

forming a conductive grid structure spaced from the at least one
micropoint; and

forming a dielectric structure spaced from the at least one
micropoint and between the insulative layer and the grid structure.

27. The method of Claim 26 wherein said emitter electrode structure
comprises metal strips.

28. The method of Claim 26 wherein said emitter electrode structure
comprises aluminum strips.

29. The method of Claim 28 wherein said aluminum strips have a
thickness of about 1000 Å.

30. The method of Claim 26 wherein said insulative layer comprises
silicon oxide.

31. The method of Claim 26 wherein said insulative layer comprises
silicon nitride.